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PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
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LOS ANGELES, CA 90025

PCT

WRITTEN OPINION

(PCT Rule 66)

Applicant's or agent's file reference 42390.P12323		Date of Mailing (day/month/year) 20 MAY 2004
International application No. PCT/US02/31154		REPLY DUE within 2 months/days from the above date of mailing
International filing date (day/month/year) 27 September 2002 (27.09.2002)	Priority date (day/month/year) 28 September 2001 (28.09.2001)	
International Patent Classification (IPC) or both national classification and IPC IPC(7): H04L 29/12 and US Cl.: 709/238		
Applicant INTEL CORPORATION		

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☒ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 28 January 2004 (28.01.2004)

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized office Hosain T Alam <i>Peggy Harwood</i> Telephone No. 703-305-3900
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I. Basis of the opinion**1. With regard to the elements of the international application:***

- ☒ the international application as originally filed
- ☒ the description:
pages 1-19, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the claims:
pages 20-26, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the drawings:
pages 1-9, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINIONInternational application No.
PCT/US02/31154**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>4-7, 10-21, 25, 27-29</u>	YES
	Claims <u>1-3, 8, 9, 22-24, 26, 30-32</u>	NO
Inventive Step (IS)	Claims <u>6, 7, 11-21, 28, 29</u>	YES
	Claims <u>1-5, 8-10, 22-27, 30-32</u>	NO
Industrial Applicability (IA)	Claims <u>1-32</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

WRITTEN OPINION

International application No.

PCT/US02/31154

VI. Certain document cited

1. Certain published documents (Rule 70.10)

Application No Patent No.	Publication Date (day/month/year)	Filing Date (day/month/year)	Priority Date (valid claim) (day/month/year)
US 6,182,226 B1	30 January 2001 (30.01.2001)	18 March 1998 (18.03.1998)	18 March 1998 (18.03.1998)

2. Non-written disclosures (Rule 70.9)

<u>Kind of non-written disclosure</u>	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

TIME LIMIT:

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

V. 2. Citations and Explanations:

1. Claims 1-3, 8, 9, 22-24, 26, 30-32 lacks novelty under PCT Article 33(2) as being anticipated by Kerr et al (US 6,243,667 B1).

As per claims 1 and 22, Kerr teaches a method and a machine-readable medium having stored thereon data representing instructions that, if executed by one or more processors of a network device, cause the one or more processors to perform the method comprising: receiving a packet at a network device (see col.3, lines 55-56), the packet including a header (see col.3, lines 58-59) and a payload (implicit); tagging the packet, by a first packet-processing application of a plurality of packet processing applications, with a cache lookup key based upon original contents of the header, the cache lookup key indicating where in a unified cache a cache entry corresponding to the packet will be stored (see col.3, lines 65-67; col.4, lines 8-11; and col.6, lines 32-41 & 50-53); and those of the plurality of packet-processing applications attempting to access the cache entry from the unified cache subsequent to the tagging by the first packet-processing application using the cache lookup key rather than generating a new cache lookup key based upon current contents of the header (see col.4, lines 1-7).

As per claims 2 and 23, Kerr further teaches wherein said tagging the packet with a cache lookup key comprises populating a lookup key field of an internal packet descriptor corresponding to the packet with a hash value (see col.4, lines 8-11).

As per claims 3 and 24, Kerr teaches wherein the packet comprises an Internet Protocol (IP) packet and the cache lookup key is based upon a source IP address of the header, a destination IP address of the header, a source port of the header, a destination port of the header, and a protocol value in the header (see col.3, lines 3-5 & 58-65).

As per claim 8, Kerr teaches a method comprising the steps of a step for determining whether a cache lookup key is present in a packet descriptor associated with a received packet (see col.3, line 65 - col.4, line 7); a step for performing a lookup in a unified cache with the cache lookup key if it is determined that the cache lookup key is present in the packet descriptor (see col.4, lines 1-2); a step for creating a new cache entry in the unified cache based upon information in a header of the received packet and tagging the packet if it is determined that the cache lookup key is not present in the packet descriptor or the lookup does not locate an appropriate existing cache entry (see col.4, lines 2-5); and a step for updating an existing cache entry with module-specific information (see col.8, lines 45-49).

As per claims 9 and 30, Kerr further teaches wherein the unified cache is implemented as a hash table and tagging the packet comprises generating a hash value based upon at least a source address and a destination address in the header and storing the hash value in the packet descriptor (see col.3, lines 58-65; col.4, lines 8-11; and col.10, lines 41-48).

As per claim 26, Kerr further teaches wherein the plurality of packet-processing applications are distributed among at least two processors of the network device (see Fig.1, #140 & #540).

As per claim 31, Kerr further teaches wherein the network device comprises a router (see abstract and col.1, lines 18-19).

As per claim 32, Kerr further teaches wherein the network device comprises a switch (see col.1, lines 18-19).

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

2. Claims 4, 5, 10, 25, and 27 lacks an inventive step under PCT Article 33(3) as being obvious over Kerr et al (US 6,243,667 B1) in view of Reid et al. (US 6,182,226 B1).

As per claims 4, 10, 25, and 27, Kerr teaches all the limitations including wherein the plurality of packet-processing applications includes applying packet filtering (see col.6, lines 50-53) and routing or forwarding (see col.1, lines 58-61), but he does not explicitly teach wherein the plurality of packet-processing applications includes applying one or more of Network Address Translation (NAT). Reid teaches of packet-processing applications includes applying one or more of Network Address Translation (NAT) (see col.6, lines 47-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Reid within the system of Kerr by implementing Address Translation (NAT) because Kerr teaches that in embodiments where the data packets are saved, it would be desirable to perform a name/address translation (see Kerr: col.10, lines 13-19).

As per claim 5, Kerr further teaches wherein the plurality of packet-processing applications are distributed among two or more processors of the network device (see claim 26 rejection above).

----- NEW CITATIONS -----